

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



# CITY OF PORTLAND

# BUILDING PERMIT

This is to certify that  
FREEDOM FIRE PROTECTION  
209 QUAKER RIDGE RD  
CASCO, ME 04015

For installation at  
191 RIVERSIDE ST  
BERLIN CITY

Job ID: 2012-04-3862-FAFS

CBL: 268- A-002-001

has permission to extend NFPA 13 sprinkler into new service bay  
provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statues of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of the buildings and structures, and of the application on file in the department.

Notification of inspection and written permission procured before this building or part thereof is lathed or otherwise closed-in. 48 HOUR NOTICE IS REQUIRED.

A final inspection must be completed by owner before this building or part thereof is occupied. If a certificate of occupancy is required, it must be

Bjawa (SB)  
Fire Prevention Officer

Code Enforcement Officer / Plan Reviewer

THIS CARD MUST BE POSTED ON THE STREET SIDE OF THE PROPERTY  
PENALTY FOR REMOVING THIS CARD

## BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

or email: [buildinginspections@portlandmaine.gov](mailto:buildinginspections@portlandmaine.gov)

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the city of Portland Inspections Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**
- **Permits expire in 6 months. If the project is not started or ceases for 6 months.**
- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue.**

### **Final Fire**

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OF CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCUPIED.



# PORTLAND MAINE

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Director of Planning and Urban Development  
Penny St. Louis

**Job ID: 2012-04-3862-FAFS**  
**extend NFPA 13 sprinkler into new**  
**service bay**

**For installation at:**  
**191 RIVERSIDE ST**  
**BERLIN CITY**

**CBL: 268- A-002-001**

## **Conditions of Approval:**

### **Fire**

Installation shall be in accordance with NFPA 13. A signed compliance letter will be required.

A separate sprinkler permit is required from the State Fire Marshal's Office.

Sprinkler supervision shall be provided in accordance with NFPA 101, *Life Safety Code*, and NFPA 72, *National Fire Alarm and Signaling Code*.

Sprinkler protection shall be maintained. Where the system is to be shut down for maintenance or repair, the system shall be checked at the end of each day to insure the system has been placed back in service.

The Fire Department will require Knox locking caps on all Fire Department Connections on the exterior of the building.

System acceptance and commissioning must be coordinated with alarm and suppression system contractors and the Fire Department. Call 874-8703 to schedule.

City ordinance requires a Knox Box for all structures with a sprinkler or fire alarm system.

# City of Portland, Maine - Building or Use Permit Application

389 Congress Street, 04101 Tel: (207) 874-8703, FAX: (207) 8716

Job No: 2012-04-3862-FAFS	Date Applied: 4/27/2012	CBL: 268- A-002-001	
Location of Construction: 191 RIVERSIDE ST	Owner Name: CAR SUM ME RIVER, LLC	Owner Address: 8270 GREENSBORO DR STE 950 MCLEAN, VA 22102	Phone:
Business Name:	Contractor Name: FREEDOM FIRE PROTECTION	Contractor Address: 209 QUAKER RIDGE RD CASCO ME 04015	Phone: (207) -627-4109
Lessee/Buyer's Name:	Phone:	Permit Type: FIRE ALARM - Fire Alarm	Zone: B-4
Past Use: Car dealership -Berlin City Toyota	Proposed Use: Same – Car dealership – install water based fire suppression system in the new service bay (connected to permit #2012-03- 3566)	Cost of Work: 17000.00  Fire Dept: 5/28/12 <input checked="" type="checkbox"/> Approved w/ conditions <input type="checkbox"/> Denied <input type="checkbox"/> N/A  Signature: <i>[Signature]</i> (58)	CEO District:  Inspection: Use Group: Type:  Signature:
Proposed Project Description: WB Fire Suppression; Car dealership		Pedestrian Activities District (P.A.D.)	
Permit Taken By:	<b>Zoning Approval</b>		

<p>1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</p> <p>2. Building Permits do not include plumbing, septic or electrical work.</p> <p>3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.</p>	<b>Special Zone or Reviews</b> <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetlands <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan  <input type="checkbox"/> Maj <input type="checkbox"/> Min <input type="checkbox"/> MM Date: <i>04 27 12</i> <i>ABM</i>	<b>Zoning Appeal</b> <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied  Date:	<b>Historic Preservation</b> <input checked="" type="checkbox"/> Not in Dist or Landmark <input type="checkbox"/> Does not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied  Date: <i>ASB</i>
	<b>CERTIFICATION</b>		

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the appication is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE

B-4

Permit 2012-03-3862  
to add service bay

Entered 4/27/12 (B)



# Water-Based Fire Suppression System Permit

If you or the property owner owes real estate or property taxes or user charges on any property within the city, payment arrangements must be made before permits of any kind are accepted.

2012-04-3862-FAFS

RECEIVED

218-1502

APR 27 2012

Installation address: 191 Riverside Street CBL: \_\_\_\_\_

Exact location: (within structure) New Service Bay, Back of building

Type of occupancy(s) (NFPA & ICC): Car Dealership

Dept. of Building Inspections  
City of Portland Maine

Building owner: Allied Cook Construction

Managing Supervisor (RMS): Timothy Vess License No: 348

Supervisor phone: 207-627-4109 E-mail: wwales@maine.rr.com

Installing contractor: Freedom Fire Protection License No: 295

Contractor phone: 207-671-8639 E-mail: wwales@maine.rr.com

The suppression work to be done will be: New:  Renovation:  Addition to existing system:

This is an amendment to an existing permit: Yes:  NO:  Permit no: \_\_\_\_\_

NFPA Standard this system is designed to: NFPA 13 Edition: 2010

\*Non-NFPA systems are not approved for use within the City of Portland.

Download a new copy of this document from [www.portlandmaine.gov/fire](http://www.portlandmaine.gov/fire) for every submittal. Attach all working documents and complete approved submittals as may be required by the State Fire Marshal's Office on electronic PDF's in addition to full sized plans.

Contractor shall verify location and type of all FDCs shall be approved in writing by the Fire Prevention Bureau.

<b>COST OF WORK:</b> <u>\$16,579.00</u>
<b>PERMIT FEE:</b> <u>\$190.00</u>
( $\$10$ PER $\$1,000$ + $\$30$ FOR THE FIRST $\$1,000$ )

Submit all information to the Building Inspections Department, 389 Congress Street, Room 315, Portland, Maine 04101.

Prior to acceptance of any fire protection system, a complete commissioning and acceptance test must be coordinated with all fire system contractors and the Fire Department, and proper documentation of such test(s) provided.

All installation(s) must comply with NFPA and the Fire Department Technical Standard(s).

Applicant signature: Mark Radzyski Date: April 26, 2012



# PORTLAND MAINE

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## Receipts Details:

**Tender Information:** Check , Check Number: 16863

**Tender Amount:** 190.00

## Receipt Header:

**Cashier Id:** bsaucier

**Receipt Date:** 4/27/2012

**Receipt Number:** 43299

## Receipt Details:

Referance ID:	6279	Fee Type:	BP-Constr
Receipt Number:	0	Payment Date:	
Transaction Amount:	190.00	Charge Amount:	190.00
Job ID: Job ID: 2012-04-3862-FAFS - WB Fire Supression; Car dealership			
Additional Comments: 191 Riverside			

**Thank You for your Payment!**



... Fire Protection by Computer Design

METROPOLITAN FIRE PROTECTION  
460 PARKWAY BOULEVARD  
BROOMALL, PA 19008  
484-421-3021

Job Name : BERLIN CITY TOYOTA  
Building : 191 RIVERSIDE STREET  
Location : PORTLAND, MAINE 04103  
System : #1 AREA#1  
Contract :  
Data File : Berlin City Toyota HC.WXF

Hydraulic Design Information Sheet

Name - BERLIN CITY TOYOTA Date - 4/4/12  
 Location - PORTLAND, MAINE 04103  
 Building - 191 RIVERSIDE STREET System No. - #1 AREA#1  
 Contractor - Contract No. -  
 Calculated By - TIM VESS Drawing No. - FP-2  
 Construction: ( ) Combustible (X) Non-Combustible Ceiling Height - VARIES  
 Occupancy - CAR DEALERSHIP

S (X) NFPA 13 ( ) Lt. Haz. Ord.Haz.Gp. ( ) 1 (X) 2 ( ) 3 ( ) Ex.Haz.  
 Y ( ) NFPA 231 ( ) NFPA 231C ( ) Figure Curve

S Other  
 T Specific Ruling Made By Date

M	Area of Sprinkler Operation	- 1500	System Type	Sprinkler/Nozzle
	Density	- .20	(X) Wet	Make TYCO
D	Area Per Sprinkler	- 130.00	( ) Dry	Model TY-FRB
E	Elevation at Highest Outlet	- 20.00	( ) Deluge	Size 3/4"
S	Hose Allowance - Inside	-	( ) Preaction	K-Factor 8.0
I	Rack Sprinkler Allowance	-	( ) Other	Temp.Rat.155
G	Hose Allowance - Outside	- 250		

N Note

Calculation Flow Required - 572.298 Press Required - 55.802 At Test  
 Summary C-Factor Used: 120 Overhead 140 Underground

W	Water Flow Test:	Pump Data:	Tank or Reservoir:
A	Date of Test - 9/8/2004	Rated Cap.-	Cap. -
T	Time of Test -	@ Press -	Elev.-
E	Static Press - 82	Elev. -	Well
R	Residual Press - 78		Proof Flow
	Flow - 1393		
S	Elevation - 0		

U Location -

P Source of Information - PORTLAND WATER DISTRICT

Y



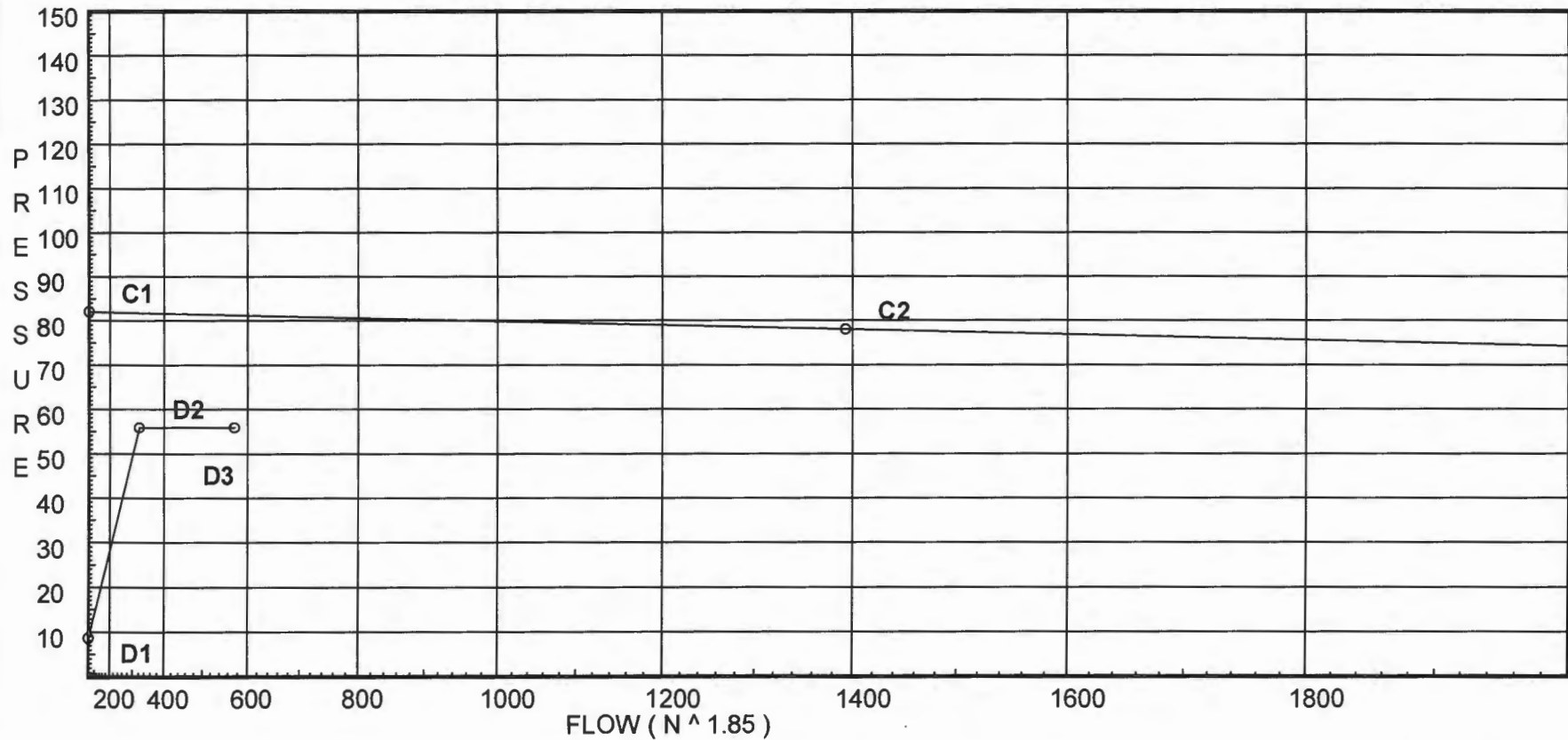
# Water Supply Curve (C)

METROPOLITAN FIRE PROTECTION  
BERLIN CITY TOYOTA

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Date 4/4/12

City Water Supply:  
 C1 - Static Pressure : 82  
 C2 - Residual Pressure: 78  
 C2 - Residual Flow : 1393

Demand:  
 D1 - Elevation : 8.662  
 D2 - System Flow : 322.298  
 D2 - System Pressure : 55.802  
 Hose ( Adj City ) :  
 Hose ( Demand ) : 250  
 D3 - System Demand : 572.298  
 Safety Margin : 25.427



# Fittings Used Summary

METROPOLITAN FIRE PROTECTION  
BERLIN CITY TOYOTA

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Fitting Legend

Abbrev. Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
E 90' Standard Elbow	2	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
T 90' Flow Thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
Zac Ames 2000SS	Fitting generates a Fixed Loss Based on Flow																			

Pressure / Flow Summary - STANDARD

METROPOLITAN FIRE PROTECTION  
BERLIN CITY TOYOTA

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
33	18.5		22.98	na				
43	20.0		15.9	na				
106	20.0	8	13.44	na	29.33	0.2	130	7.0
105	20.0	8	11.63	na	27.28	0.2	130	7.0
104	20.0	8	10.8	na	26.29	0.2	130	7.0
103	20.0	8	10.57	na	26.01	0.2	130	7.0
102	20.0	8	10.57	na	26.01	0.2	130	7.0
101	20.0	8	10.81	na	26.31	0.2	130	7.0
23	20.0		27.38	na				
32	18.5		23.6	na				
42	20.0		23.29	na				
22	20.0		28.34	na				
31	18.5		23.92	na				
41	20.0		23.66	na				
21	20.0		28.52	na				
30	18.5		24.15	na				
40	20.0		23.71	na				
20	20.0		28.69	na				
29	18.5		24.4	na				
39	20.0		23.97	na				
19	20.0		29.04	na				
28	18.5		24.58	na				
38	20.0		24.34	na				
60	20.0		29.12	na				
18	20.0		30.3	na				
27	18.5		24.68	na				
37	20.0		24.31	na				
17	20.0		30.77	na				
26	18.5		24.73	na				
36	20.0		24.39	na				
16	20.0		31.49	na				
34	18.5		22.81	na				
25	18.5		24.76	na				
35	20.0		24.31	na				
15	20.0		32.35	na				
44	20.0		15.8	na				
112	20.0	8	13.38	na	29.26	0.2	130	7.0
111	20.0	8	11.59	na	27.24	0.2	130	7.0
110	20.0	8	10.78	na	26.26	0.2	130	7.0
109	20.0	8	10.56	na	26.0	0.2	130	7.0
108	20.0	8	10.56	na	26.0	0.2	130	7.0
107	20.0	8	10.81	na	26.31	0.2	130	7.0
24	20.0		27.69	na				
14	18.5		28.88	na				
13	18.5		28.95	na				
12	18.5		29.17	na				
11	18.5		29.37	na				
10	18.5		29.55	na				
9	18.5		29.91	na				
8	18.5		31.09	na				
7	18.5		31.7	na				
6	18.5		32.44	na				
5	18.5		33.35	na				
4	10.66		40.87	na				
3	7.66		43.28	na				
2	7.66		44.53	na				
1	2.0		47.44	na				

Flow Summary - Standard

METROPOLITAN FIRE PROTECTION  
BERLIN CITY TOYOTA

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Node No.	Elevation	K-Fact	Pt Actual	Pn	Flow Actual	Density	Area	Press Req.
0	2.0		51.52	na				
TEST	0.0		55.8	na	250.0			

The maximum velocity is 17.09 and it occurs in the pipe between nodes 33 and 43

Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
33	-108.43	1.61	2T 16.0	1.450	22.978				
to		120	0.0	16.000	-0.650				
43	-108.43	-0.3685	0.0	17.450	-6.431		Vel = 17.09		
43	0.0	1.61	0.0	6.660	15.897				
to		120	0.0	0.0	0.0				
106	-108.43	-0.3685	0.0	6.660	-2.454		Vel = 17.09		
106	29.33	1.61	0.0	8.830	13.443		K Factor = 8.00		
to		120	0.0	0.0	0.0				
105	-79.1	-0.2055	0.0	8.830	-1.815		Vel = 12.47		
105	27.28	1.61	0.0	8.830	11.628		K Factor = 8.00		
to		120	0.0	0.0	0.0				
104	-51.82	-0.0941	0.0	8.830	-0.831		Vel = 8.17		
104	26.29	1.61	0.0	8.830	10.797		K Factor = 8.00		
to		120	0.0	0.0	0.0				
103	-25.53	-0.0254	0.0	8.830	-0.224		Vel = 4.02		
103	26.01	1.61	0.0	8.830	10.573		K Factor = 8.00		
to		120	0.0	0.0	0.0				
102	0.48	0.0	0.0	8.830	0.0		Vel = 0.08		
102	26.01	1.61	0.0	8.830	10.573		K Factor = 8.00		
to		120	0.0	0.0	0.0				
101	26.49	0.0272	0.0	8.830	0.240		Vel = 4.17		
101	26.31	1.61	1T 8.0	162.160	10.813		K Factor = 8.00		
to		120	0.0	8.000	0.0				
23	52.8	0.0973	0.0	170.160	16.563		Vel = 8.32		
23	0.0	1.61	1T 8.0	1.450	27.376				
to		120	0.0	8.000	0.650				
13	52.8	0.0974	0.0	9.450	0.920		Vel = 8.32		
	0.0								
	52.80				28.946		K Factor = 9.81		
32	22.21	1.61	2T 16.0	1.450	23.601				
to		120	0.0	16.000	-0.650				
42	22.21	0.0197	0.0	17.450	0.343		Vel = 3.50		
42	0.0	1.61	8E 32.0	217.000	23.294				
to		120	1T 8.0	40.000	0.0				
22	22.21	0.0196	0.0	257.000	5.042		Vel = 3.50		
22	0.0	1.61	1T 8.0	1.450	28.336				
to		120	0.0	8.000	0.650				
12	22.21	0.0196	0.0	9.450	0.185		Vel = 3.50		
	0.0								
	22.21				29.171		K Factor = 4.11		
31	23.62	1.61	2T 16.0	1.450	23.924				
to		120	0.0	16.000	-0.650				
41	23.62	0.0220	0.0	17.450	0.384		Vel = 3.72		

Final Calculations - Standard

METROPOLITAN FIRE PROTECTION  
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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
41	0.0	1.61	1T 8.0	213.000	23.658		
to		120	0.0	8.000	0.0		
21	23.62	0.0220	0.0	221.000	4.858		Vel = 3.72
21	0.0	1.61	1T 8.0	1.450	28.516		
to		120	0.0	8.000	0.650		
11	23.62	0.0219	0.0	9.450	0.207		Vel = 3.72
	0.0						
	23.62				29.373		K Factor = 4.36
30	23.94	1.61	1T 8.0	1.450	24.147		
to		120	0.0	8.000	-0.650		
40	23.94	0.0226	0.0	9.450	0.214		Vel = 3.77
40	0.0	1.61	2E 8.0	213.000	23.711		
to		120	0.0	8.000	0.0		
20	23.94	0.0225	0.0	221.000	4.980		Vel = 3.77
20	0.0	1.61	1T 8.0	1.450	28.691		
to		120	0.0	8.000	0.650		
10	23.94	0.0225	0.0	9.450	0.213		Vel = 3.77
	0.0						
	23.94				29.554		K Factor = 4.40
29	24.19	1.61	1T 8.0	1.450	24.401		
to		120	0.0	8.000	-0.650		
39	24.19	0.0231	0.0	9.450	0.218		Vel = 3.81
39	0.0	1.61	2E 8.0	213.000	23.969		
to		120	0.0	8.000	0.0		
19	24.19	0.0230	0.0	221.000	5.075		Vel = 3.81
19	0.0	1.61	1T 8.0	1.450	29.044		
to		120	0.0	8.000	0.650		
9	24.19	0.0230	0.0	9.450	0.217		Vel = 3.81
	0.0						
	24.19				29.911		K Factor = 4.42
28	34.13	1.61	1T 8.0	1.450	24.583		
to		120	0.0	8.000	-0.650		
38	34.13	0.0435	0.0	9.450	0.411		Vel = 5.38
38	0.0	1.61	1E 4.0	106.040	24.344		
to		120	0.0	4.000	0.0		
60	34.13	0.0434	0.0	110.040	4.779		Vel = 5.38
60	0.0	2.157	1E 6.153	106.120	29.123		
to		120	0.0	6.153	0.0		
18	34.13	0.0104	0.0	112.273	1.173		Vel = 3.00
18	0.0	2.157	1T 12.307	1.450	30.296		
to		120	0.0	12.307	0.650		
8	34.13	0.0105	0.0	13.757	0.144		Vel = 3.00

Final Calculations - Standard

METROPOLITAN FIRE PROTECTION  
BERLIN CITY TOYOTA

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
	0.0 34.13				31.090		K Factor = 6.12
27 to 37	27.61	1.61 120 0.0294	1T	8.0 0.0 0.0	1.450 8.000 9.450	24.682 -0.650 0.278	Vel = 4.35
37 to 17	0.0 27.61	1.61 120 0.0293	2E	8.0 0.0 0.0	212.160 8.000 220.160	24.310 0.0 6.459	Vel = 4.35
17 to 7	0.0 27.61	1.61 120 0.0293	1T	8.0 0.0 0.0	1.450 8.000 9.450	30.769 0.650 0.277	Vel = 4.35
	0.0 27.61				31.696		K Factor = 4.90
26 to 36	29.06	1.61 120 0.0323	1T	8.0 0.0 0.0	1.450 8.000 9.450	24.732 -0.650 0.305	Vel = 4.58
36 to 16	0.0 29.06	1.61 120 0.0322	2E	8.0 0.0 0.0	212.160 8.000 220.160	24.387 0.0 7.100	Vel = 4.58
16 to 6	0.0 29.06	1.61 120 0.0322	1T	8.0 0.0 0.0	1.450 8.000 9.450	31.487 0.650 0.304	Vel = 4.58
	0.0 29.06				32.441		K Factor = 5.10
34 to 33	107.72	3.26 120 0.0117		0.0 0.0 0.0	14.660 0.0 14.660	22.806 0.0 0.172	Vel = 4.14
33 to 32	108.43 216.15	3.26 120 0.0425		0.0 0.0 0.0	14.660 0.0 14.660	22.978 0.0 0.623	Vel = 8.31
32 to 31	-22.21 193.94	3.26 120 0.0348		0.0 0.0 0.0	9.290 0.0 9.290	23.601 0.0 0.323	Vel = 7.45
31 to 30	-23.62 170.32	3.26 120 0.0273		0.0 0.0 0.0	8.160 0.0 8.160	23.924 0.0 0.223	Vel = 6.55
30 to 29	-23.95 146.37	3.26 120 0.0207		0.0 0.0 0.0	12.290 0.0 12.290	24.147 0.0 0.254	Vel = 5.63
29 to 28	-24.19 122.18	3.26 120 0.0148		0.0 0.0 0.0	12.290 0.0 12.290	24.401 0.0 0.182	Vel = 4.70

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****	Notes	*****
28	-34.13	3.26		12.290	24.583				
to		120		0.0	0.0				
27	88.05	0.0081		12.290	0.099		Vel = 3.38		
27	-27.61	3.26		12.290	24.682				
to		120		0.0	0.0				
26	60.44	0.0041		12.290	0.050		Vel = 2.32		
26	-29.06	3.26	1E	9.408	12.290	24.732			
to		120		0.0	9.408	0.0			
25	31.38	0.0012		0.0	21.698	0.026	Vel = 1.21		
25	0.0	1.61	1E	4.0	1.450	24.758			
to		120		0.0	4.000	-0.650			
35	31.38	0.0372		0.0	5.450	0.203	Vel = 4.95		
35	0.0	1.61	1E	4.0	212.160	24.311			
to		120		0.0	4.000	0.0			
15	31.38	0.0372		0.0	216.160	8.035	Vel = 4.95		
15	0.0	1.61	1T	8.0	1.450	32.346			
to		120		0.0	8.000	0.650			
5	31.38	0.0371		0.0	9.450	0.351	Vel = 4.95		
	0.0								
	31.38					33.347	K Factor = 5.43		
34	-107.72	1.61	2T	16.0	1.450	22.806			
to		120		0.0	16.000	-0.650			
44	-107.72	-0.3641		0.0	17.450	-6.353	Vel = 16.98		
44	0.0	1.61		0.0	6.660	15.803			
to		120		0.0	0.0	0.0			
112	-107.72	-0.3640		0.0	6.660	-2.424	Vel = 16.98		
112	29.26	1.61		0.0	8.830	13.379	K Factor = 8.00		
to		120		0.0	0.0	0.0			
111	-78.46	-0.2026		0.0	8.830	-1.789	Vel = 12.36		
111	27.24	1.61		0.0	8.830	11.590	K Factor = 8.00		
to		120		0.0	0.0	0.0			
110	-51.22	-0.0921		0.0	8.830	-0.813	Vel = 8.07		
110	26.26	1.61		0.0	8.830	10.777	K Factor = 8.00		
to		120		0.0	0.0	0.0			
109	-24.96	-0.0243		0.0	8.830	-0.215	Vel = 3.93		
109	26.00	1.61		0.0	8.830	10.562	K Factor = 8.00		
to		120		0.0	0.0	0.0			
108	1.04	0.0001		0.0	8.830	0.001	Vel = 0.16		
108	26.00	1.61		0.0	8.830	10.563	K Factor = 8.00		
to		120		0.0	0.0	0.0			
107	27.04	0.0282		0.0	8.830	0.249	Vel = 4.26		



Hyd. Ref. Point	Qa  Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	*****  Notes  *****
107 to 24	26.30 53.34	1.61 120 0.0992	1T 8.0 0.0	162.160 8.000	10.812 0.0		K Factor = 8.00 Vel = 8.41
24 to 14	0.0 53.34	1.61 120 0.0991	1E 4.0 0.0	1.450 4.000 5.450	27.693 0.650 0.540		Vel = 8.41
14 to 13	0.0 53.34	3.068 120 0.0043	0.0 0.0	14.660 0.0	28.883 0.0		Vel = 2.31
13 to 12	52.80 106.14	3.068 120 0.0153	0.0 0.0	14.660 0.0	28.946 0.0		Vel = 4.61
12 to 11	22.22 128.36	3.068 120 0.0217	0.0 0.0	9.290 0.0	29.171 0.0		Vel = 5.57
11 to 10	23.62 151.98	3.26 120 0.0222	0.0 0.0	8.160 0.0	29.373 0.0		Vel = 5.84
10 to 9	23.94 175.92	3.26 120 0.0290	0.0 0.0	12.290 0.0	29.554 0.0		Vel = 6.76
9 to 8	24.19 200.11	3.26 120 0.0369	2E 18.815 0.0	13.160 18.815	29.911 0.0		Vel = 7.69
8 to 7	34.14 234.25	3.26 120 0.0493	0.0 0.0	12.290 0.0	31.090 0.0		Vel = 9.00
7 to 6	27.61 261.86	3.26 120 0.0606	0.0 0.0	12.290 0.0	31.696 0.0		Vel = 10.07
6 to 5	29.06 290.92	3.26 120 0.0737	0.0 0.0	12.290 0.0	32.441 0.0		Vel = 11.18
5 to 4	31.38 322.3	3.26 120 0.0890	3E 28.223 0.0	18.160 28.223 46.383	33.347 3.396 4.129		Vel = 12.39
4 to 3	0.0 322.3	3.26 120 0.0891	1E 9.408 0.0	3.000 9.408 12.408	40.872 1.299 1.105		Vel = 12.39
3 to 2	0.0 322.3	4.26 120 0.0242	2E 26.334 0.0	25.540 26.334 51.874	43.276 0.0 1.255		Vel = 7.25

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Hyd. Ref. Point	Qa Qt	Dia. "C" Pf/Ft	Fitting or Eqv. Ln.	Pipe Ftng's Total	Pt Pe Pf	Pt Pv Pn	***** Notes *****
2 to 1	0.0 322.3	4.26 120 0.0242	1E 13.167 0.0 0.0	5.660 13.167 18.827	44.531 2.451 0.456		Vel = 7.25
1 to 0	0.0 322.3	4.26 120 0.0242	2E 26.334 1Zac 0.0 0.0	4.830 26.334 31.164	47.438 3.332 0.754		* Fixed loss = 3.332 Vel = 7.25
0 to TEST	0.0 322.3	8.27 140 0.0007	4E 113.872 0.0 0.0	458.330 113.872 572.202	51.524 3.866 0.412		* Fixed loss = 3 Vel = 1.93
	250.00 572.30				55.802		Qa = 250.00 K Factor = 76.61